The development of a scale to determine the effect of folkloric beliefs in the orthopedic and traumatology field

The folkloric beliefs in orthopedics

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Abstract

Aim: In Turkish society, there are general beliefs about treatment, but there is no scale to categorize these beliefs about treatment and measure the prevalence in society. Therefore, the aim of this study was to develop a general beliefs scale for the orthopedic and traumatology field.

Materials and Methods: A scale comprising 25 items was applied to 698 individuals in face-to-face interviews and the data obtained were analyzed. The data were applied with confirmatory factor analysis from structural equivalence modeling. The 20th item was seen to disrupt the fit at this stage and was removed from the scale, leaving 24 items in 5 dimensions of "public beliefs about orthopedic treatment practices, beliefs related to treatment orientation, beliefs about fractures and nutrition, beliefs about infancy, and beliefs about orthopedic specialists".

Results: The model created with confirmatory factor analysis was determined to show perfect fit. The determination of valid fit with confirmatory factor analysis indicated that structural validity was present. The Cronbach α value for the reliability of the scale was 0.886, indicating that the scale is very reliable.

Discussion: With reliability and validity confirmed, it was concluded the scale developed could be used to measure the effect of folkloric beliefs in the orthopedic and traumatology field.

Keywords

General beliefs, Orthopedics and traumatology, Scale, Factor analysis

Introduction

In spite of current developments and treatments in the field of orthopedics and traumatology, folkloric beliefs (general public beliefs) and superstitions affect the treatment process for many patients [1]. Although this situation differs between societies, the effect is seen regardless of the educational level of the patient or their status in society [2]. There are many factors involved in the effect of folkloric beliefs on the patient's treatment process, primarily cultural and religious beliefs, financial means, and focus on external decisions related to treatment such as the influence of family members or friends [3].

Cultural and religious beliefs play a central role in orientation to treatment. As the expectation of a supernatural component in treatment increases, the patient distances themselves from modern medicine [4]. These beliefs can lead to many problems for the patient such as dealing with difficult complications, delayed treatment, and increased treatment costs [4]. Some studies have shown that educational level does not change these cultural beliefs [5]. Another reason for choosing traditional treatments is that they are cheap [5]. For example, there is a general belief among most people that traditional bonesetters are better at fracture treatment than orthopedic surgeons [5]. Increasing the quality of treatment and health service provided is only possible by ensuring a good treatment culture [6]. Modern medical applications should minimize the effect of folkloric beliefs on the clinician providing the treatment and the patient receiving the treatment [4]. One of the areas affected more by these folkloric beliefs is orthopedics and traumatology. So, how can the effect of folkloric beliefs on patients and clinicians be evaluated? The literature that may aid in determining the educational requirements of medical students or patients about this topic is scarce. In this study, an objective approach is taken to this subjective topic. The effect of folkloric beliefs on treatment, increasing awareness levels among individuals, and organizing studies about this topic are the responsibilities of all individuals included in the topic [7]. However, doctors come to the fore during this process. In this sense, the importance of doctors gaining basic professional skills is significant. While learning plans are created for students with different cultural features, it is important to be aware of folkloric beliefs and have knowledge about this area. Therefore, the aim of this study was to develop a scale to determine the effect of folkloric beliefs in the orthopedic and traumatology field.

Material and Methods

The stages in developing the scale to determine the effect of folkloric beliefs in the orthopedic and traumatology field, and the study group characteristics are presented below.

Preparation and Application of Draft Scale:

The first stage in developing the scale was the forming of a 25-item pool of folkloric beliefs stated by patients attending clinical appointments. The number of items on this draft scale was presented for evaluation by specialist academics and corrections were made in line with recommendations to produce the final draft scale. The final form of the draft scale was applied with the face-to-face survey method to a 698-person group comprising students in the social services and medical faculty of our university, non-student young people and graduate medical doctors. The participants were instructed to respond to the items with a 5-point Likert scale of "1=definitely disagree, 2=disagree, 3= neither disagree nor agree, 4=agree, and 5=definitely agree".

Statistical Methods:

For analysis of the data, confirmatory factor analysis was used from among the structural equivalence models. The factors found were analyzed with the t-test and ANOVA test according to demographic data.

Confirmatory Factor Analysis (CFA)

This procedure is about creating hidden variables (factors) based on observed variables via a previously created model. It is generally used for scale development and validity analyses or to confirm a previously-determined structure. It is used with the aim of defining multivariate statistical analyses including a hidden structure represented by many hidden or measured variables [8].

Independent samples t-test and F test (ANOVA):

When evaluating factors according to demographic data, the Independent Samples t-test was used for two independent groups and the F test (ANOVA) for more than two independent groups. While ANOVA was used for comparisons of more than two groups, in order to determine which group caused the difference, the Scheffe test was used for those abiding by homogeneity assumptions with the Tamhane's T2 test used for those not abiding by the homogeneity assumption. Error level was taken as 0.05.

Programs Used:

For analysis of the data obtained in the research, IBM SPSS 23 software was used (IBM SPSS Statistics Base 23 V, Authorization code: e56444b2255bd0030cf1).

Results

The mean age of the 698 study participants was 21.38 years (SD 3.17). Of those participating in the survey, 439 were medical students, 90 were social services, 25 were medical doctors and 144 were members of other professional groups.

Results related to Confirmatory Factor Analysis:

The results related to the fit and structural validity of the 5-factor structure obtained with confirmatory factor analysis are given below.

Model Fit:

When testing the fit between a model and the data, there is no consensus in the literature about which fit statistics to use [9]. As a result, the most commonly used model fit values of , SRMR (Standardized Root Mean Square Residual), RMR (Root Mean Square Residuals), GFI (Goodness-of-fit Index), AGFI (Adjusted Goodness-of-fit Index), IFI (Incremental Fit Index), CFI (Comparative Fit Index), and RMSEA (Root Mean Square Error of Approximation) were noted.

According to the fit values of x^2/df = 3,149 < 5; SRMR = 0,0533 < 0,08 ; RMR=0,068<0,08; 0,850<GFI=0,917; 0,850<AGFI=0,894; 0,900<IFI=0,902; 0,900< CFI = 0,901 and RMSEA= 0,056 < 0,08 ,the data showed perfect fit. The determination of the presence of valid fit with confirmatory factor analysis showed that the draft scale had structural validity. The regression coefficients are given in Table 1.

Table 1. Regression Coefficients

			Estimate	S.E.	C.R.	P
S22	<---	F1	1.000			
S21	<---	F1	1.107	.051	21.642	***
S18	<---	F1	.966	.064	15.021	***
S9	<---	F1	1.089	.063	17.361	***
S16	<---	F1	1.067	.061	17.355	***
S19	<---	F1	.999	.068	14.656	***
S14	<---	F1	1.087	.057	19.174	***
S13	<---	F1	.970	.051	19.115	***
S17	<---	F2	1.000			
S5	<---	F2	1.149	.148	7.754	***
S15	<---	F2	1.176	.133	8.816	***
S8	<---	F2	.965	.115	8.398	***
S11	<---	F2	1.254	.151	8.300	***
S25	<---	F3	1.000			
S7	<---	F3	.947	.108	8.752	***
S6	<---	F3	.913	.121	7.538	***
S4	<---	F3	.944	.110	8.606	***
S2	<---	F3	.544	.070	7.801	***
S1	<---	F3	.766	.110	6.948	***
S12	<---	F4	1.000			
S10	<---	F4	1.290	.124	10.412	***
S24	<---	F5	1.000			
S23	<---	F5	.351	.141	2.492	.013
S3	<---	F5	1.116	.135	8.298	***

***Shows whether the factor loading of regression coefficients is significant or not. If the "p" value is <0.05, factor loads are significant. Items significant for factor loading means that factors were loaded correctly. Three stars on the table [***] indicates p-value < 0.001.

Table 2. Factors and sub-models "Scale to determine the effect of folkloric beliefs (general public beliefs) in orthopedic and traumatology field"

Public beliefs about orthopedic treatment practices	9: Wrapping the knees in nettles is good for knee arthritis
	13: Wrapping fish around malunion fractures softens the fracture.
	14: Wrapping edematous locations in animal fat resolves the edema.
	16: Spreading egg white on the fracture region aids healing.
	18: Drinking herbal tea is good for joint arthritis.
	19: Massaging the fracture region with soapy water is beneficial.
	21: Sheepskin accelerates wound healing.
	22: Wrapping the fracture region with tragacanth gum is good for the fracture.
Beliefs about treatment orientation	5: If I break a bone I will go to the bonesetter.
	8: If I have a knee operation I will be crippled.
	11: Lumbar traction is good for low back pain.
	15: If I have a back operation I will be crippled.
	17: Stabilizing the fracture region with cardboard is a good method..
Beliefs about fractures and nutrition	1: Drinking offal soup accelerates fracture union.
	2: If I eat fish when I have a fracture it will not heal.
	4: Sexual relations are forbidden when you have a fracture.
	6: If I have a fracture, I should not move that side.
	7: Every fracture should be set in plaster.
	25: If a broken arm begins to get itchy, it shows the fracture is healing.
Beliefs about infancy	10: Babies should be swaddled so their legs are not crooked.
	12: Using two diapers for babies prevents hip dislocation.
Beliefs about orthopedic specialists	3: Doctors know about fractures but do not know about dislocations.
	23: Orthopedic specialization is a man's job.
	24: Orthopedic specialists are generally rude.
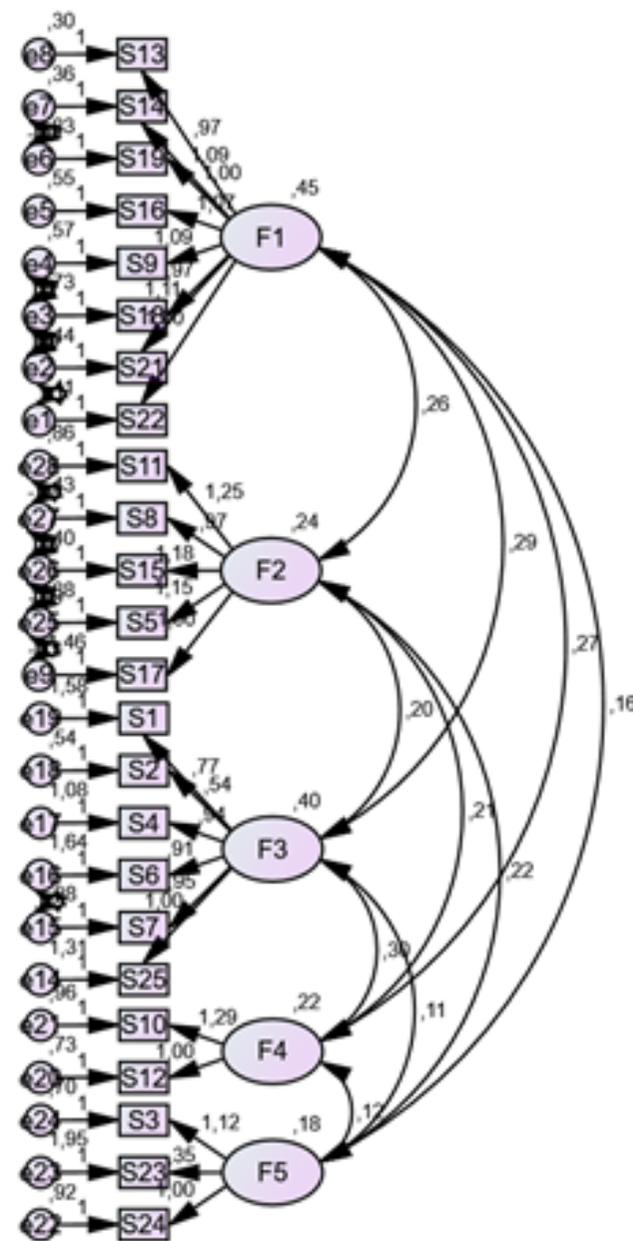
Figure 1. Diagram of the appropriate model obtained with confirmatory factor analysis

The diagram of the model obtained with confirmatory factor analysis is given in Figure 1.

Naming of Factors and subitems obtained with Confirmatory Factor Analysis

The model created by applying confirmatory factor analysis under structural equivalence modeling contained 24 items and the 5 factors were named as "public beliefs about orthopedic treatment practices, beliefs related to treatment orientation, beliefs about fractures and nutrition, beliefs about infancy, and beliefs about orthopedic specialists". (Table 2).

Internal Consistency Analysis

The internal consistency criterion of the Cronbach α coefficient indicates the scale is "not reliable" if values are <0.40, has "low reliability" for values 0.40-0.59, is "very reliable" for values 0.60-0.79 and has "high reliability" for values 0.80-1.00 [10]. The Cronbach alpha value for the internal consistency of the scale was found to be 0.886, indicating that the scale has high reliability.

Discussion

The strongest aspect of this study was that for the first time in literature, a scale was developed to determine the effect of folkloric beliefs in the orthopedic and traumatology field. Although the study began with 25 items, after data evaluation a 5-factor, 24-item form was developed. The total points that can be obtained on the scale range from 24 to120, with higher points indicating that the individual is affected at higher rates by folkloric beliefs. The aim of developing this scale was to reduce the effect on the treatment of folkloric beliefs in the orthopedic and traumatology field. These types of beliefs affect the treatment process in patients and increase medical care costs [1]. Another aim was to reveal the view of folkloric beliefs with the aid of the scale and to create a scale to be used in training in this field.

The patient-clinician relationship is a culture of treatment compliance and sustaining treatment [4]. The culture was used by Cicero (106-43 BC) meaning a soul operating with philosophy and education [11]. Continuity of cultural structure is a duty of society, and within the cultural structure, there are elements supporting or rejecting each other. People benefit from these cultural values to understand themselves and the world or to organize group relationships [12]. This study is also important in terms of determining the effect of folkloric beliefs on educational areas required to create a treatment culture and to contribute to resolving deficiencies in this area.

Although science dominates the world today, there are sections of society where superstition and folkloric behavior still play a central role [13]. How can we rationalize this irrational human behavior? Folkloric beliefs about treatment contain many different components such as physiology, psychology, religion, and medicine [14]. The scale developed in this study, with very high reliability, presents an approach for the orthopedic traumatology field at least.

The number of participants in the current study was high at a total of 698 individuals, comprising different groups. While clinicians offer treatment services within the social structure, they should be able to approach treatment with different viewpoints. In this context, it is necessary for medical faculty students to be equipped to deal with these folkloric beliefs. In a class comprising students with different cultural features, it is important to reveal the effect of folkloric beliefs on people and to increase awareness [15]. This scale is an applicable scale for medical students or health workers and in this way may determine educational deficiencies.

The effect of folkloric beliefs on treatment is a topic that requires focus [7]. It is unavoidable that medical students need to develop an awareness of folkloric beliefs, as these beliefs are known to affect treatment processes and increase treatment costs [1]. However, there have been reports in literature of positive effects such as reducing parental stress in neonatal units [14]. Physicians and medical staff should be aware of these beliefs.

Folkloric beliefs and superstitions are adaptive behavior in all people [5]. These behaviors are observed even among orthopedic surgeons in procedures performed in routine practice [16]. In addition, half of the health services offered in the USA are not sufficiently evidence-based [17]. This leads to general beliefs among clinicians, and these may be observed in every branch of medicine and every different society [18]. General beliefs in these fields should be determined with scales or assessments similar to those of the current study.

When the factors and subgroups of the scale are examined, the first factor is related to public orthopedic treatment practices. Orthopedists should be informed about this area especially because fracture treatments applied by uneducated people and non-scientific recommendations cause severe complications [19]. After modern treatment is applied to the patient, folkloric beliefs can affect compliance [20]. The second factor is views of modern orthopedic methods and treatment orientation when sick. Even if the patient is treated by an orthopedist, there is an effect of folkloric beliefs about fractures and nutrition. These are collected under the third factor heading. The fourth factor is beliefs about the infancy, and these cause a risk of permanent disability in infants. It is possible to encounter beliefs about orthopedic specialists among the public. These perceptions grouped in the fifth factor affect the patient's treatment process.

The main limitation of this study is that it was performed in a single center and well-educated groups because general beliefs show regional differences. An attempt was made to resolve this bias by including different professional groups and students attending university from different cities in the study group.

Conclusion

This study developed a scale to determine the effect of folkloric beliefs which indicated that the scale is very reliable. The 25-item draft scale had confirmatory factor analysis applied, the 20th item disrupting the fit was removed, leaving 25 items with a 5-factor structure of "public beliefs about orthopedic treatment practices, beliefs related to treatment orientation, beliefs about fractures and nutrition, beliefs about infancy, and beliefs about orthopedic specialists".

According to all these results, the scale developed to determine the effect of folkloric beliefs in the orthopedic and traumatology field was concluded to be a valid and reliable scale, which can be used to measure the effect of folkloric beliefs in the orthopedic and traumatology field.

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